

Fig. 1

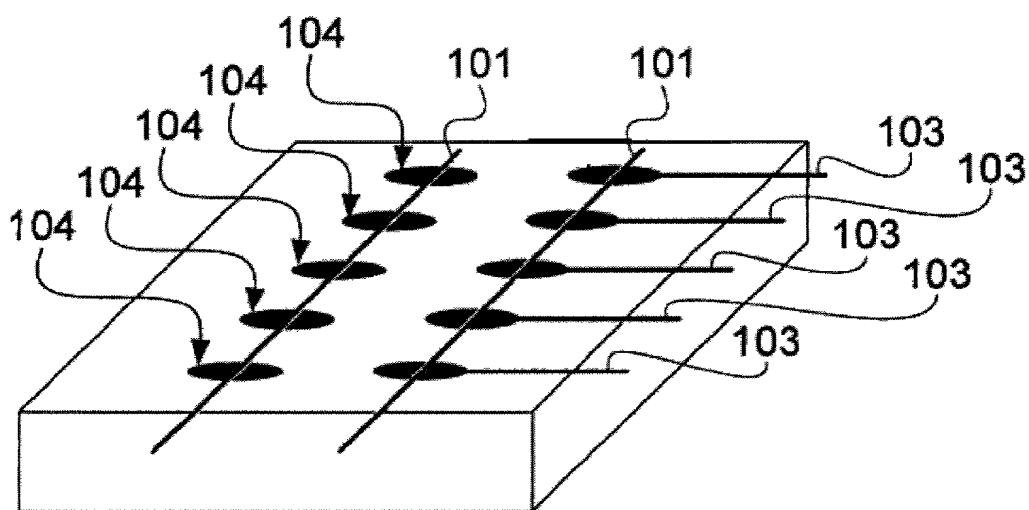


Fig. 2

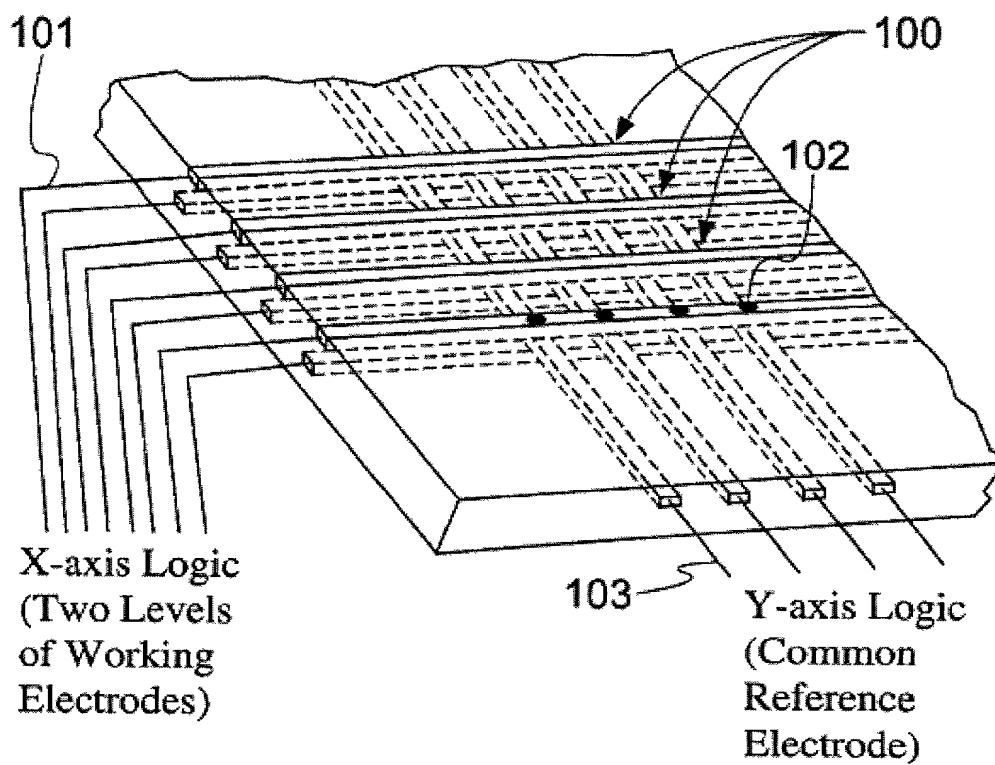


Fig. 3

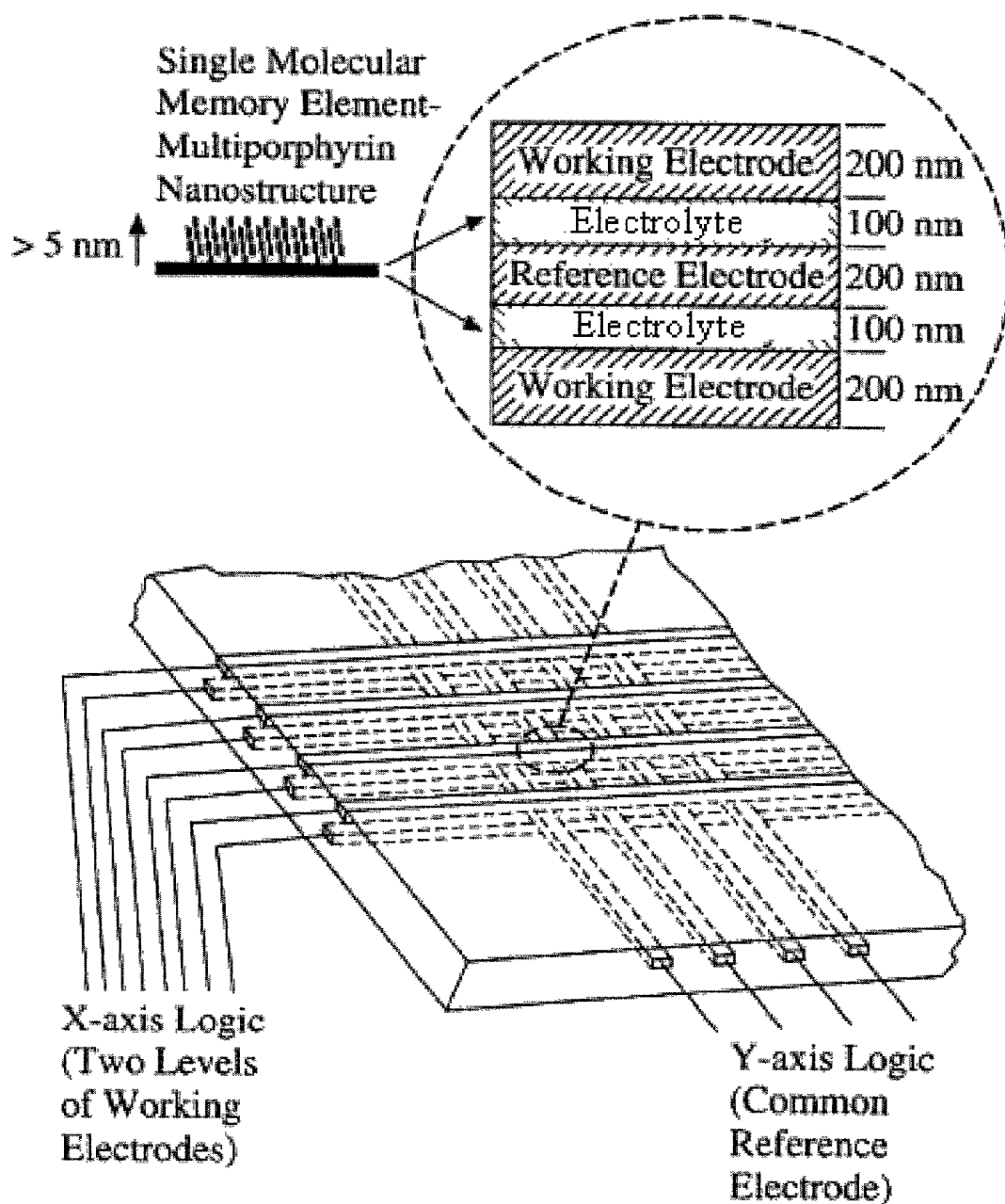


Fig. 4

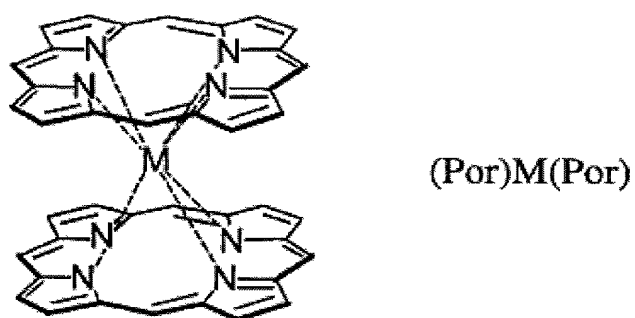
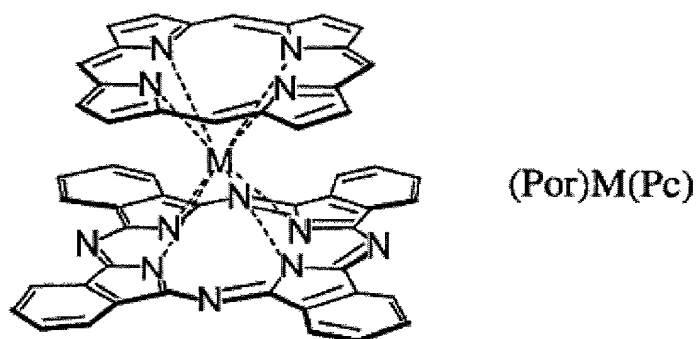
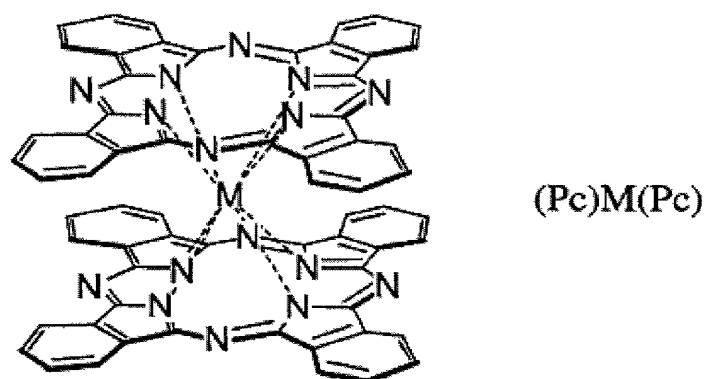


Fig. 5

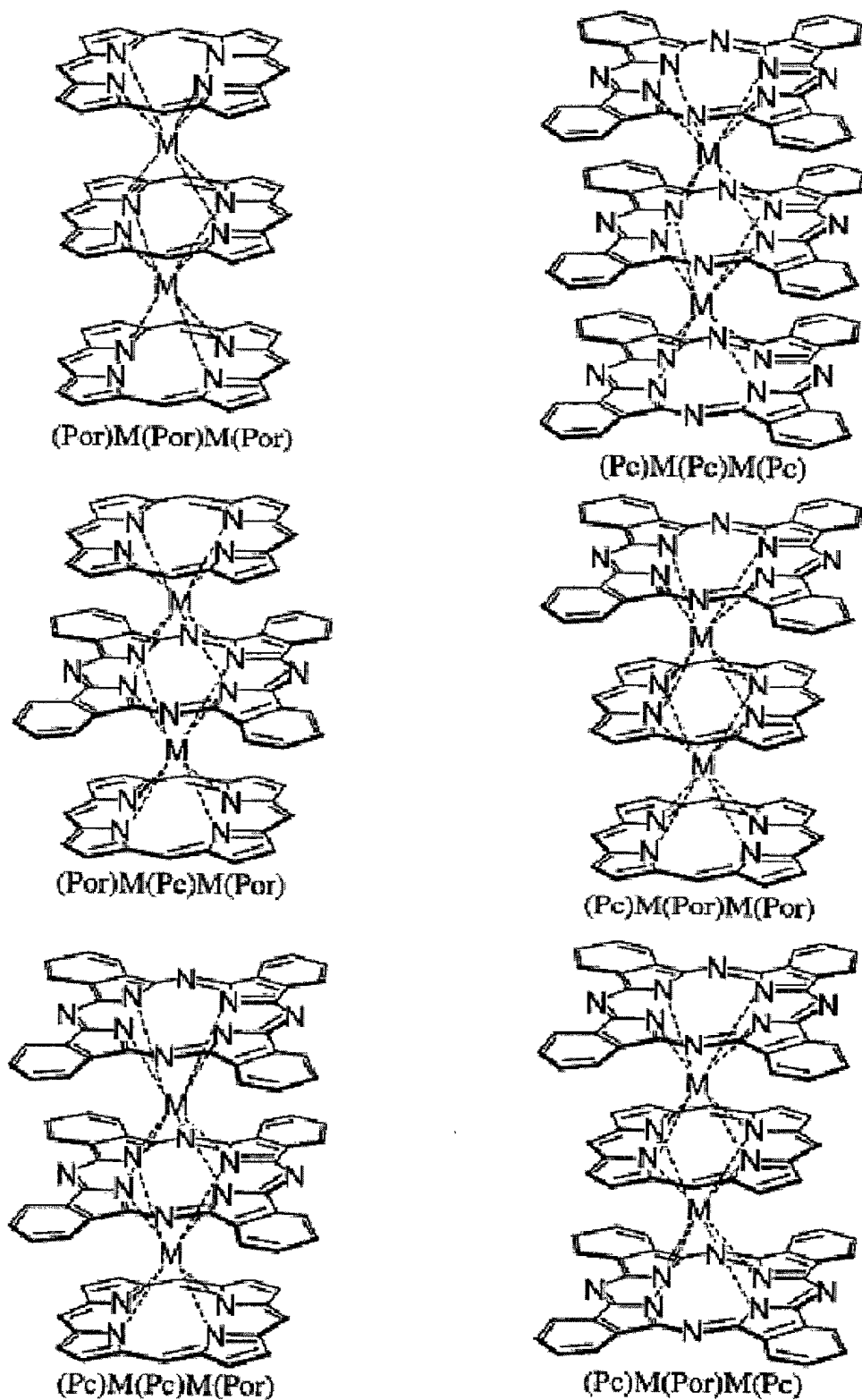
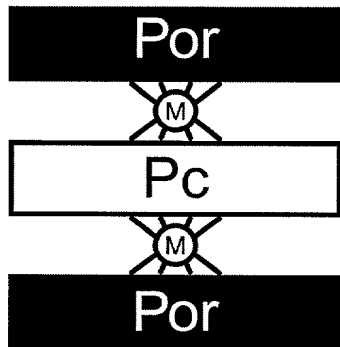
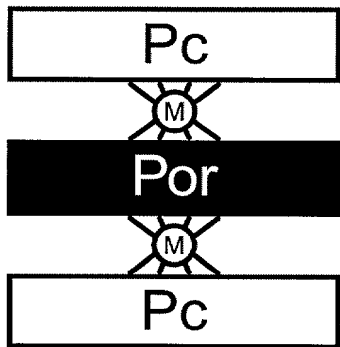


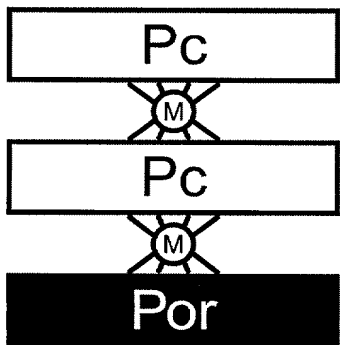
Fig. 6



type a



type b



type c

Fig. 7

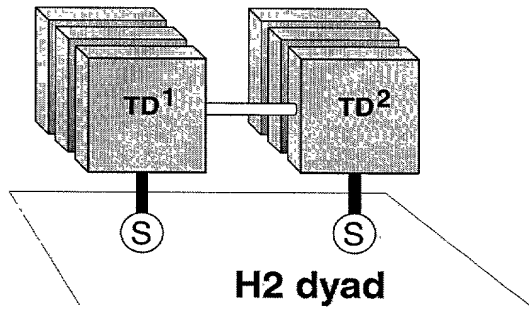
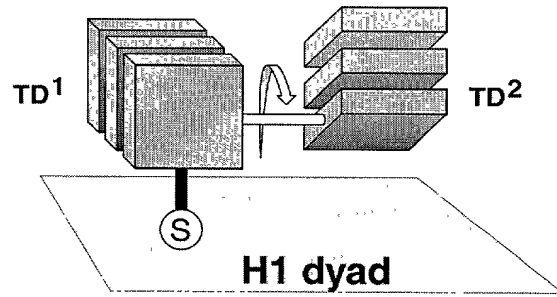
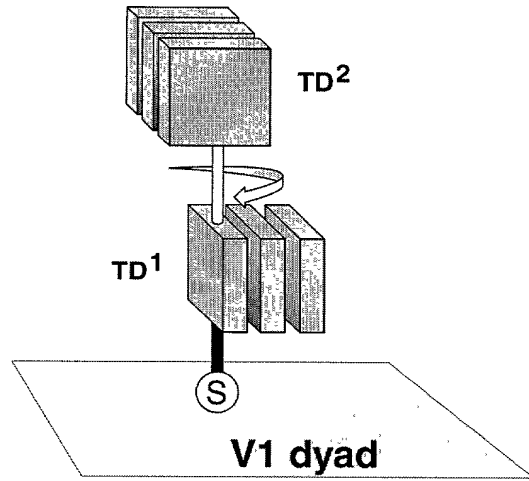


Fig. 8

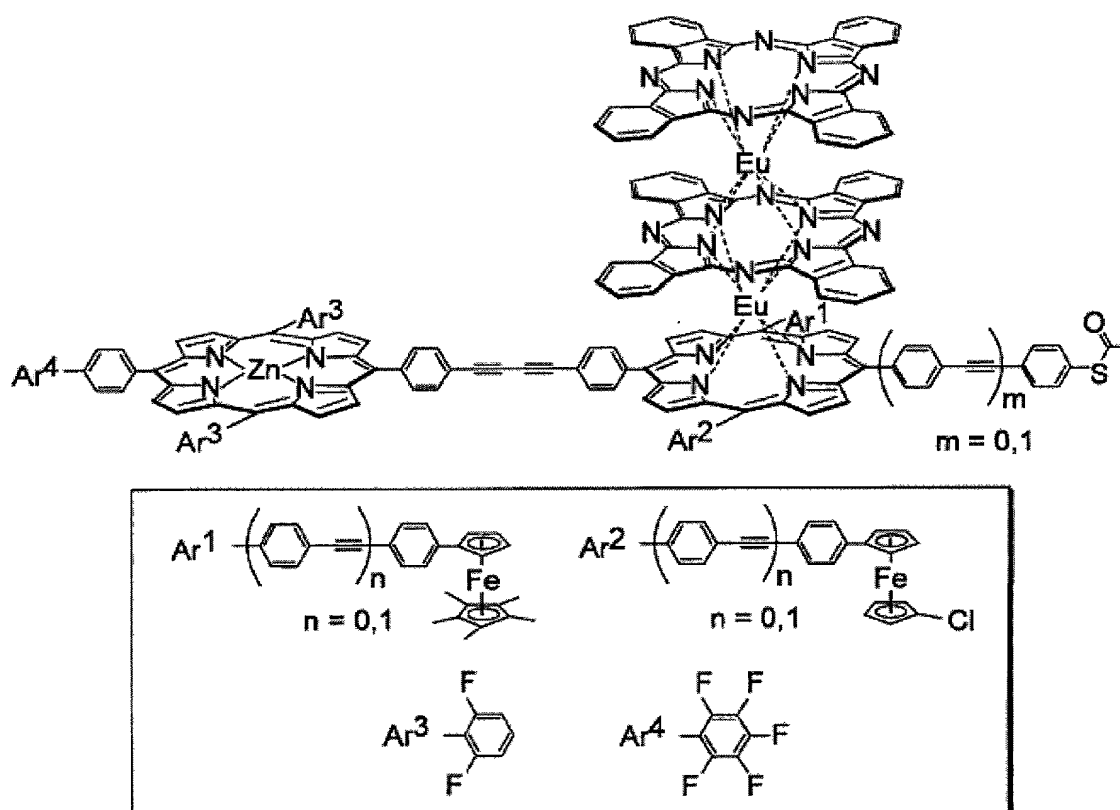


Fig. 9

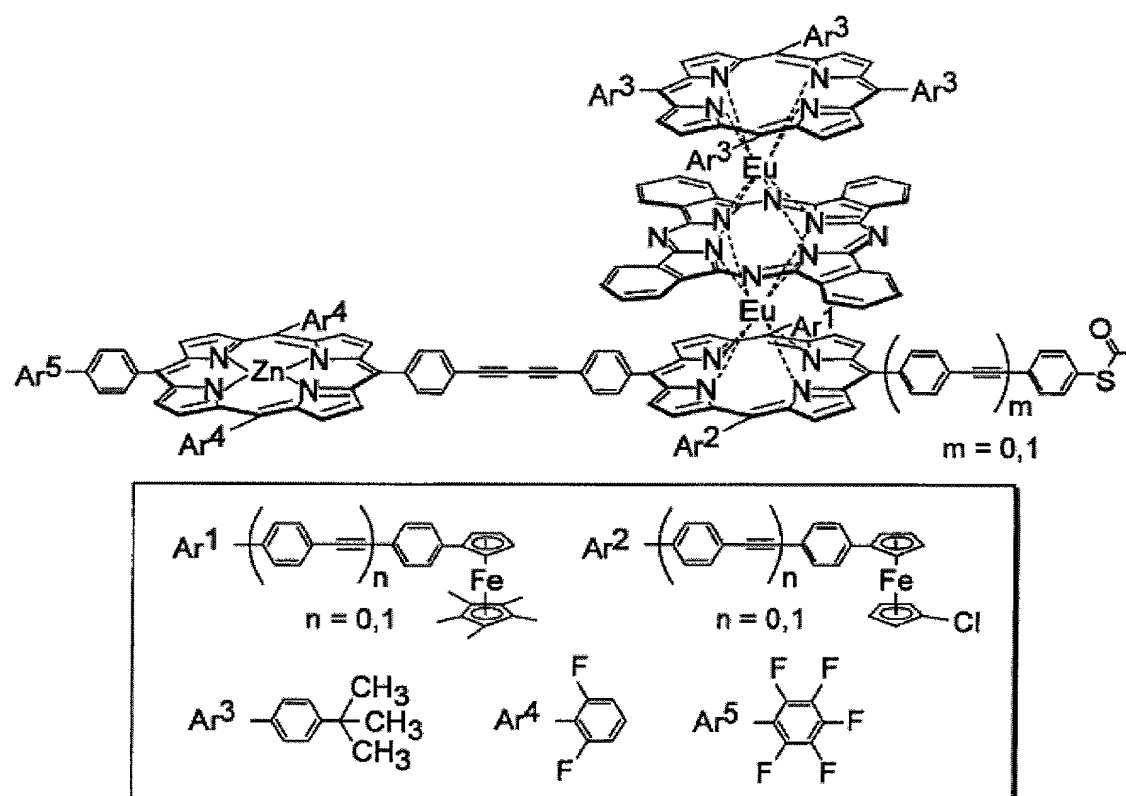


Fig. 10

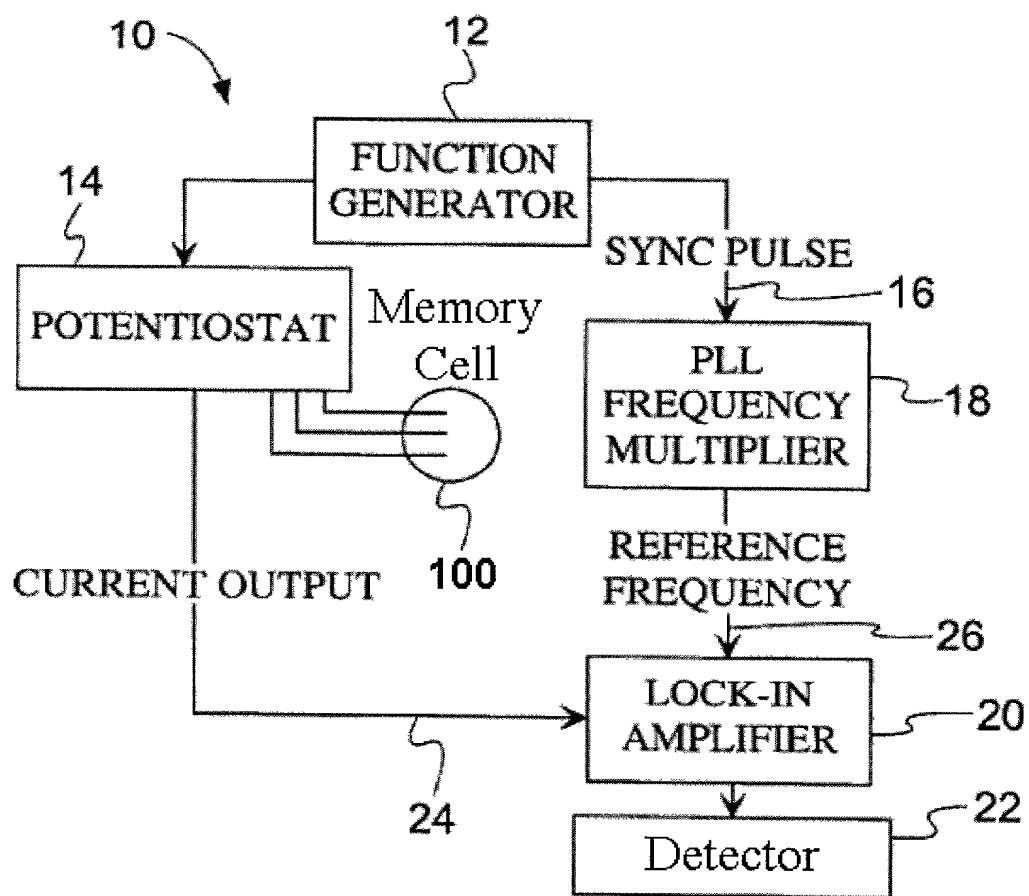


Fig. 11

Computer

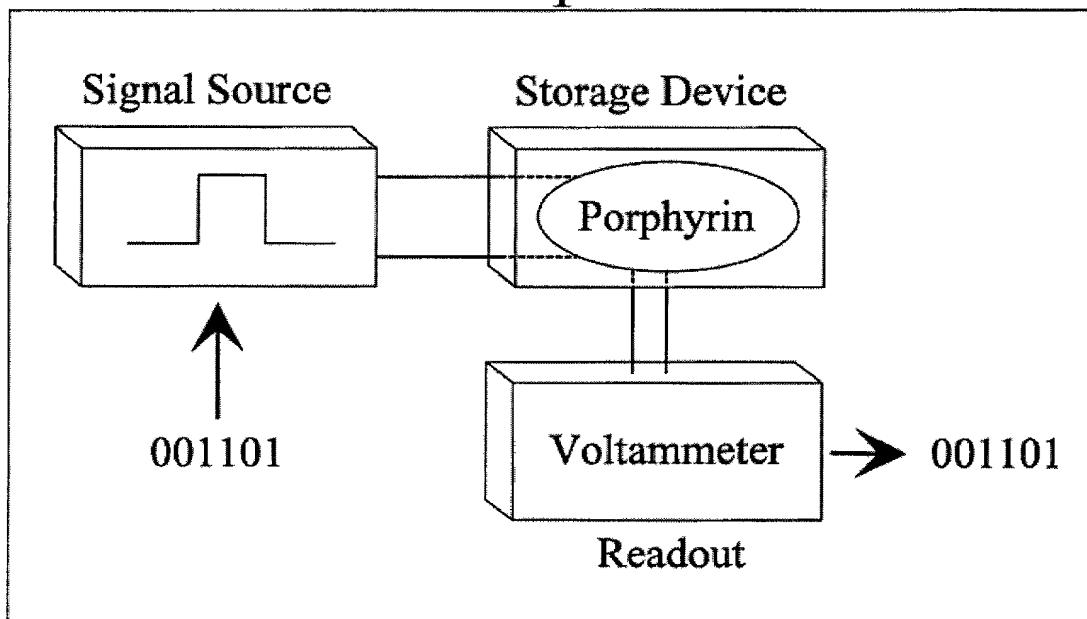


Fig. 12

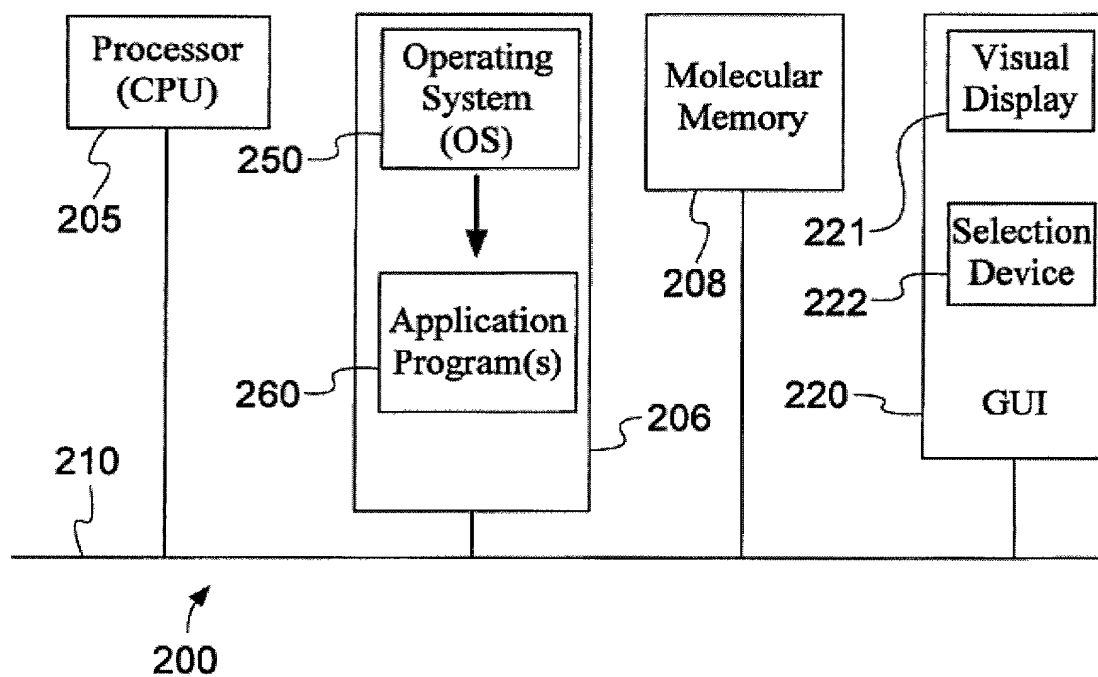


Fig. 13

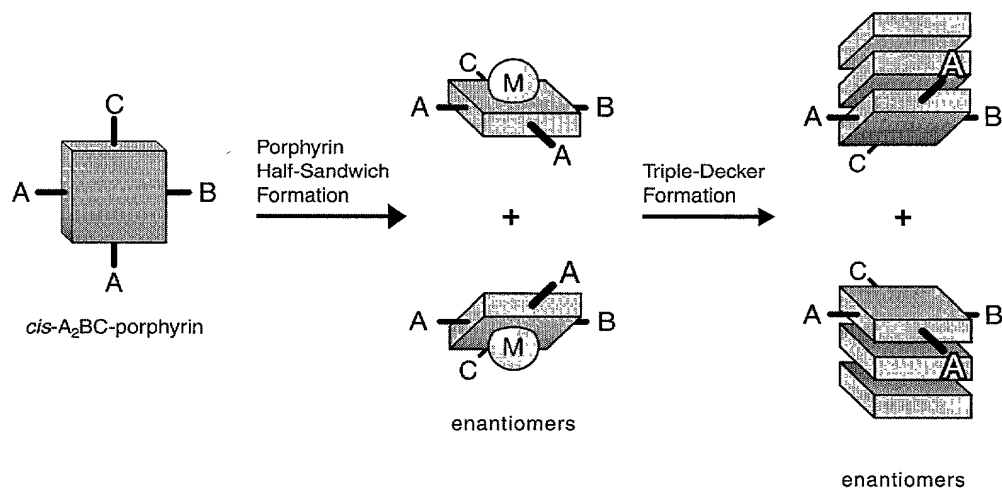
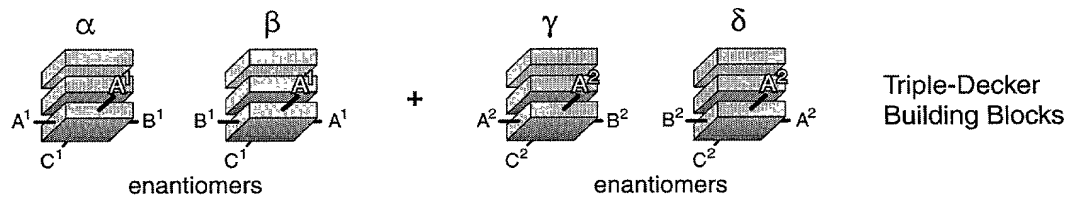
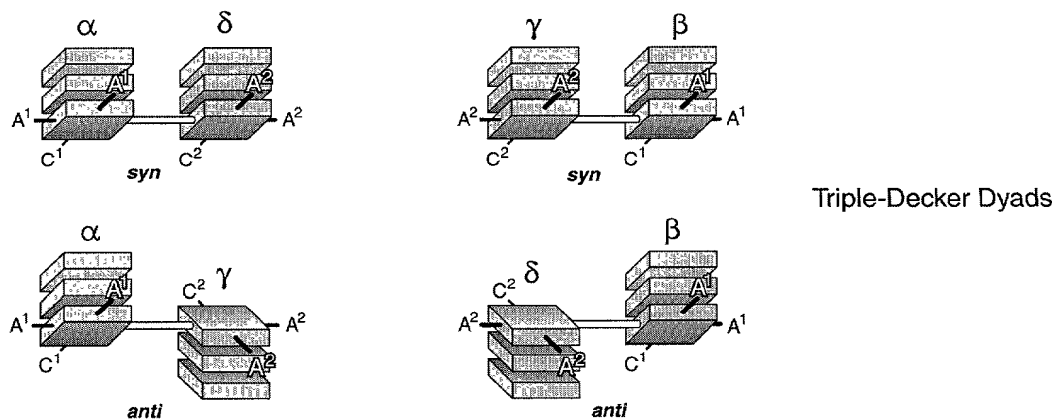


Fig. 14



↓ join B¹ + B² groups



↓ (1) attach thiol linkers
 (2) create SAMs

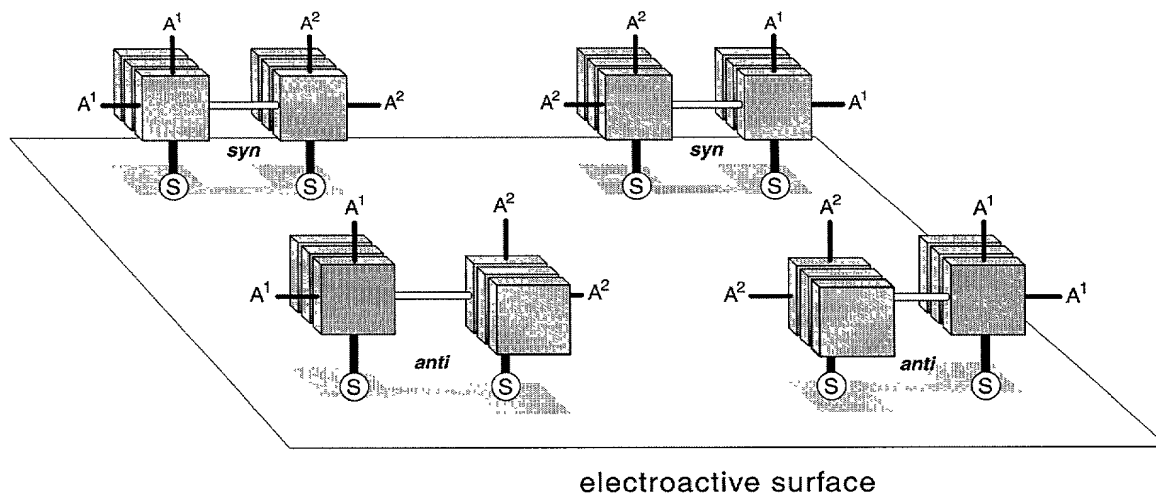


Fig. 15

Scheme 1

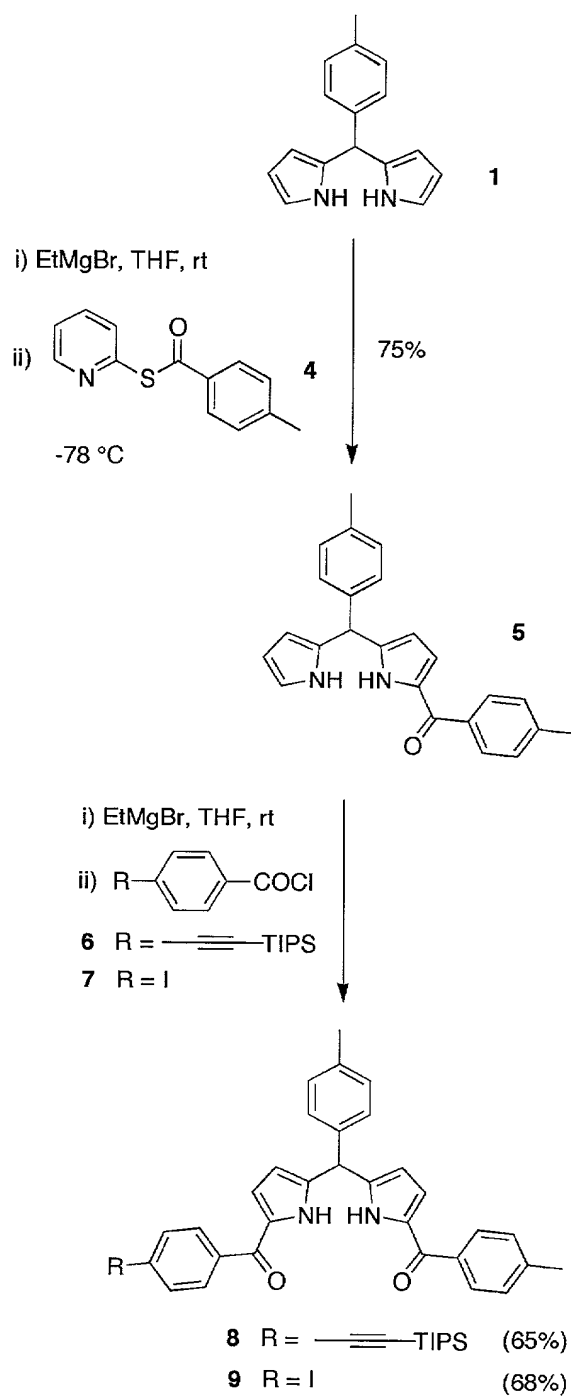
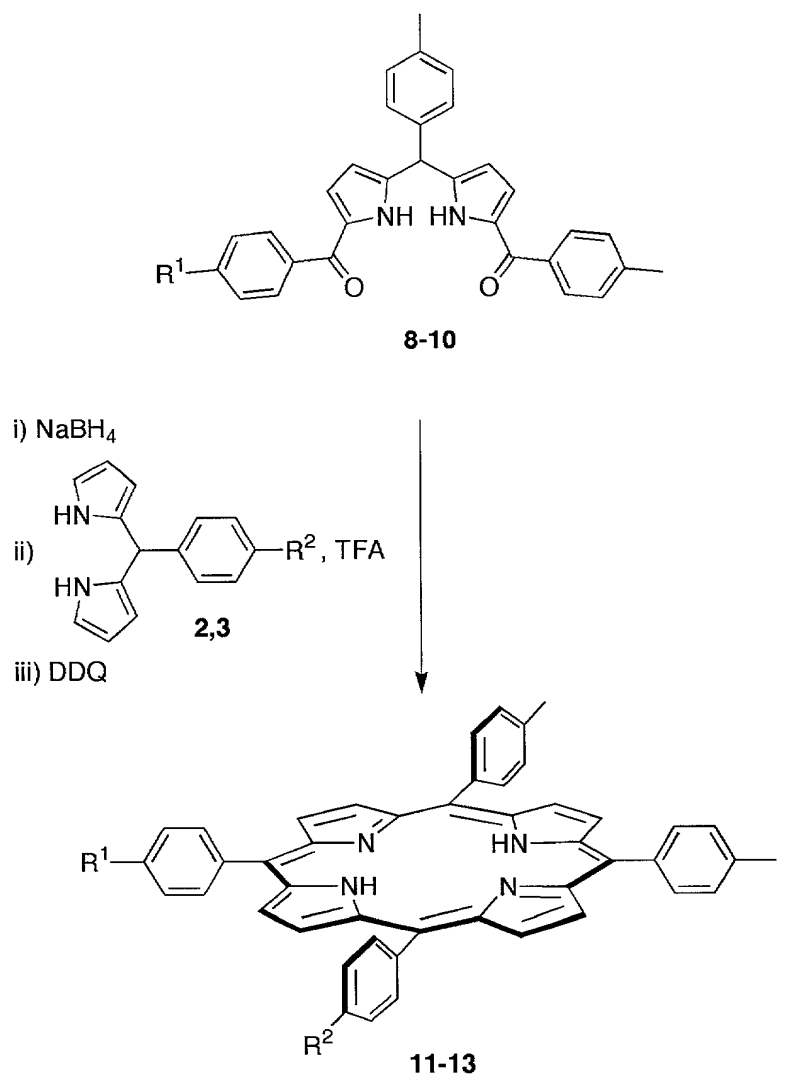


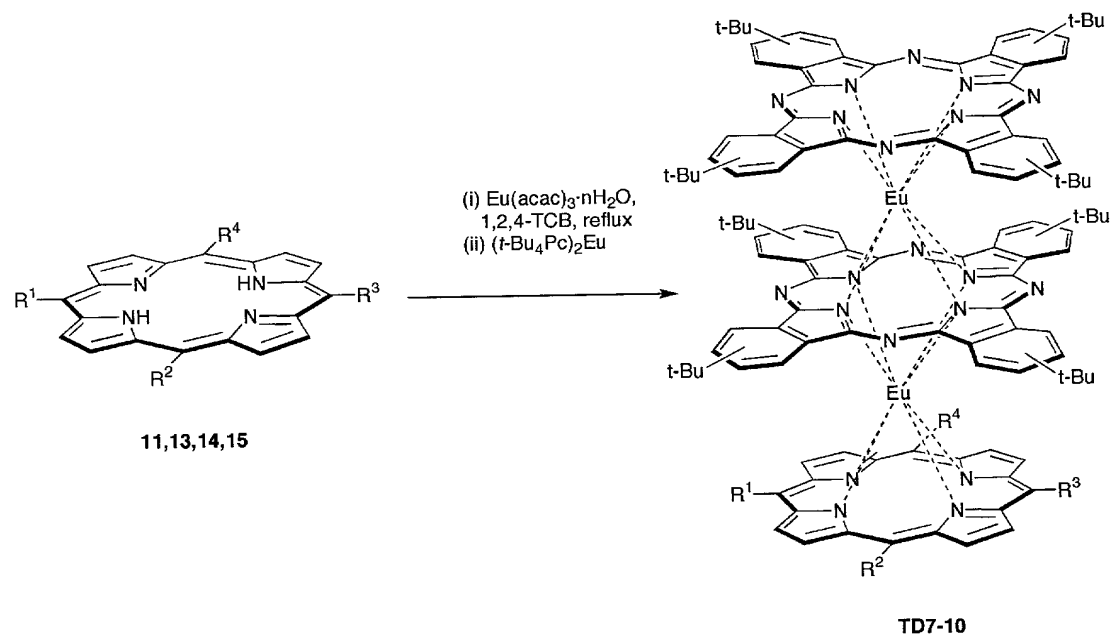
Fig. 16

Scheme 2



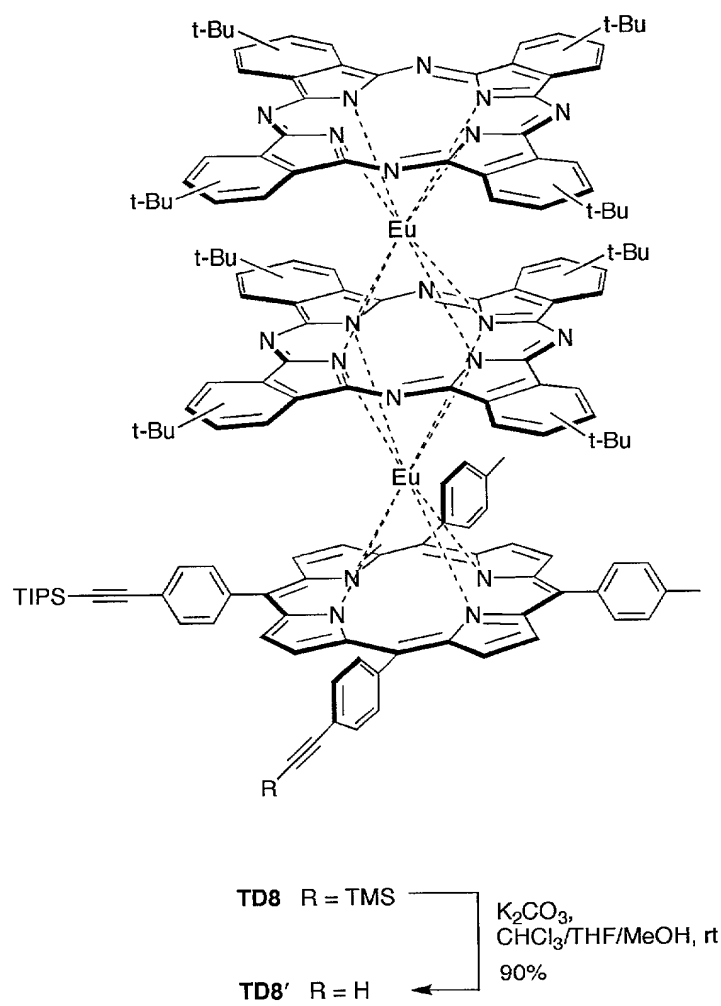
Precursors	R ¹	R ²	Porphyrin
8 + 2	—≡—TIPS	—≡—TMS	11 (20%)
9 + 2	I	—≡—TMS	12 (21%)
10 + 3	CH ₃	I	13 (21%)

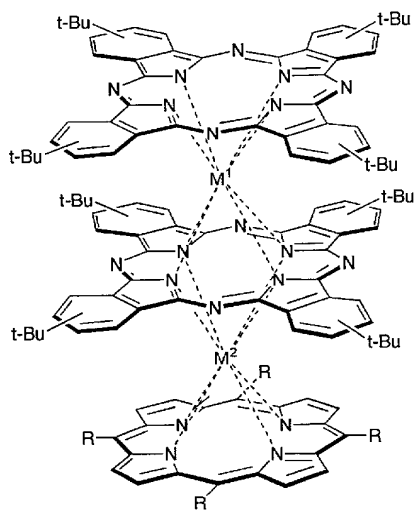
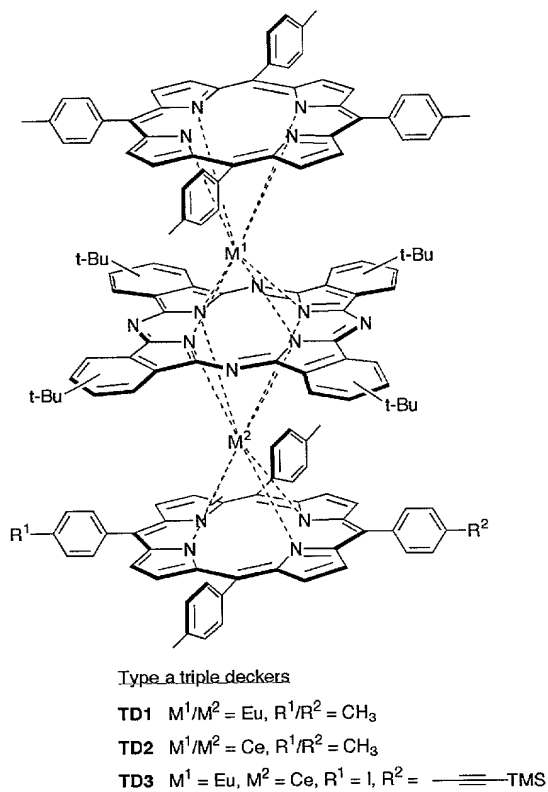
Fig. 17

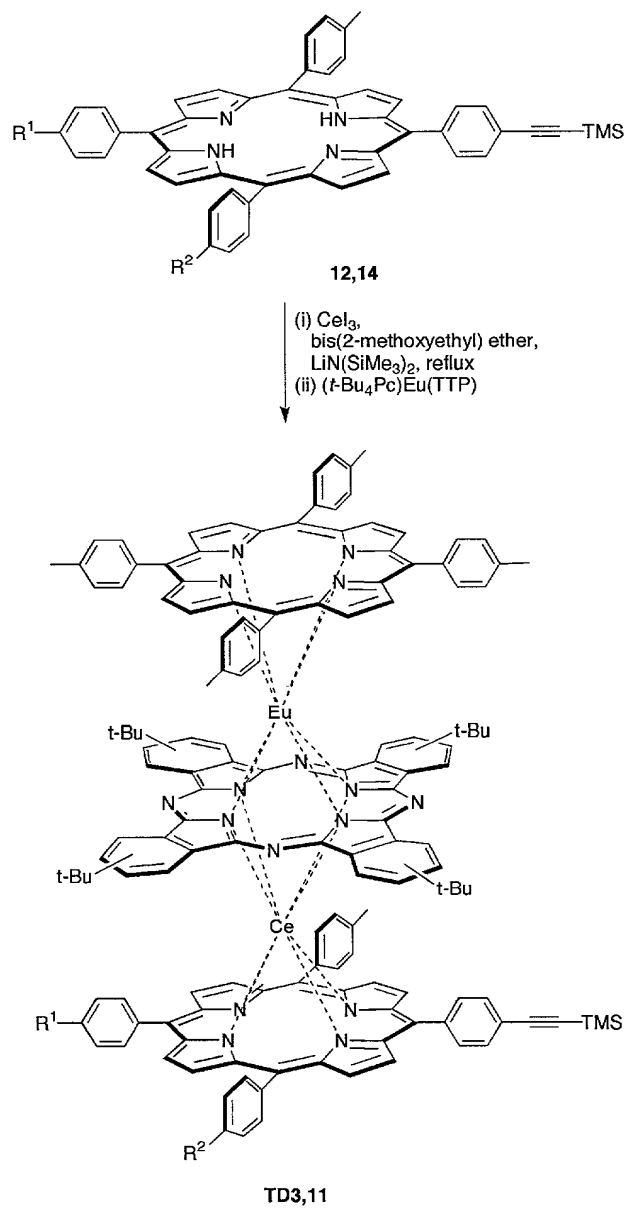


Porphyrin	R ¹	R ²	R ³	R ⁴	Triple Decker	Yield
14		<i>p</i> -tolyl		<i>p</i> -tolyl	TD7	74%
11	<i>p</i> -tolyl			<i>p</i> -tolyl	TD8	79%
13	<i>p</i> -tolyl	<i>p</i> -tolyl		<i>p</i> -tolyl	TD9	62%
15	<i>n</i> -pentyl	<i>n</i> -pentyl		<i>n</i> -pentyl	TD10	25%

Fig. 18

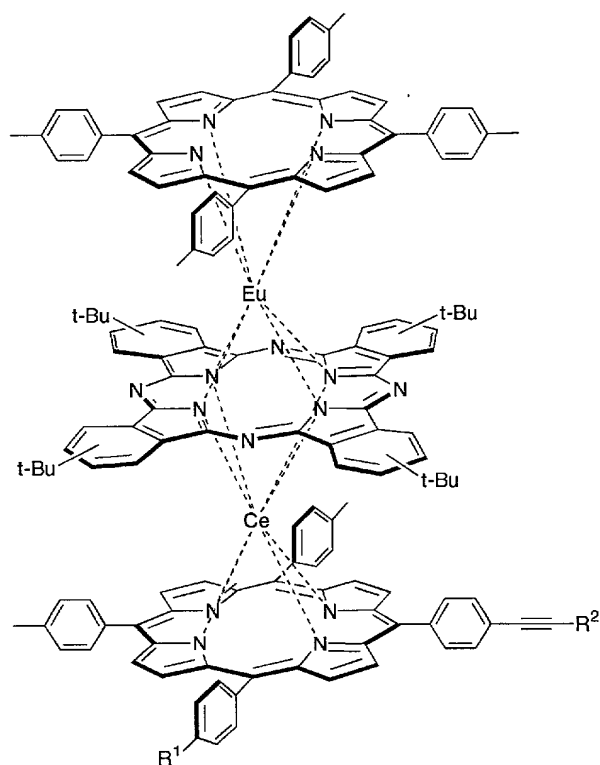
**Fig. 19**

**Fig. 20**



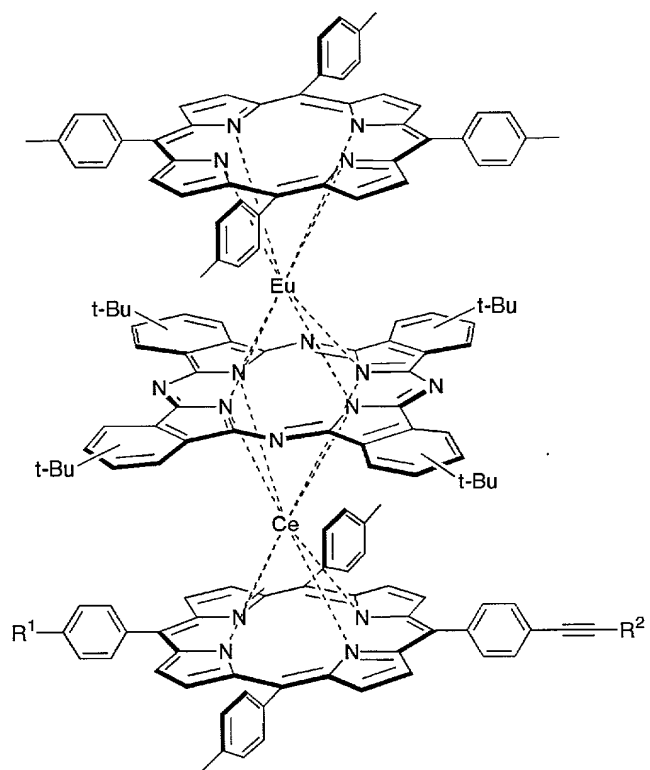
Porphyrin	R^1	R^2	Triple Decker	Yield
12	CH_3	I	TD11	54%
14	I	CH_3	TD3	46%

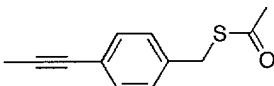
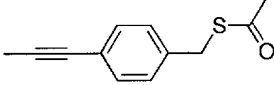
Fig. 21

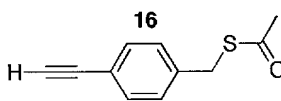


R ¹	R ²	Triple Decker	
I	TMS	TD11	<p>16</p> <p>Pd(PPh₃)₂Cl₂, CuI THF, TEA, 35 °C</p> <p>(<i>n</i>-Bu)₄NF, THF, 0 °C</p>
	TMS	AcS-TD11 (57%)	
	H	AcS-TD11' (66%)	

Fig. 22



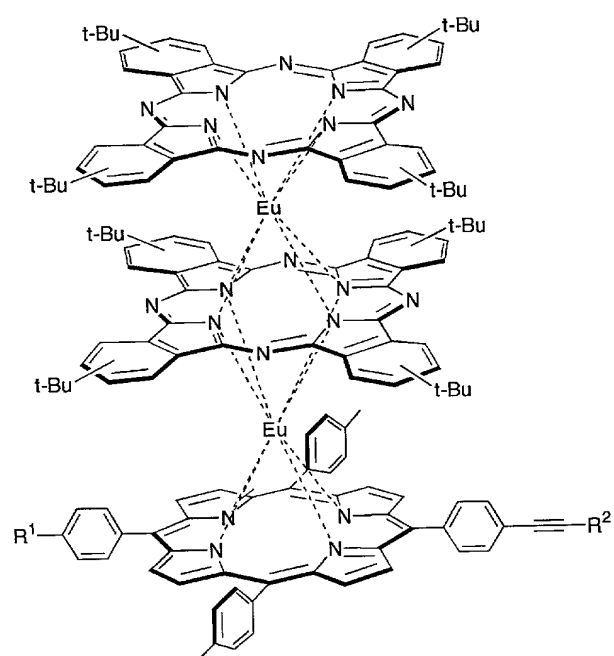
R ¹	R ²	Triple Decker
I	TMS	TD3
	TMS	AcS-TD3 (64%)
	H	AcS-TD3' (97%)



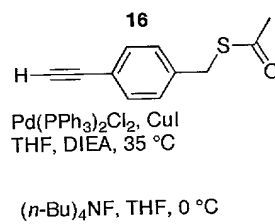
Pd(PPh₃)₂Cl₂, CuI
THF, DIEA, 35 °C

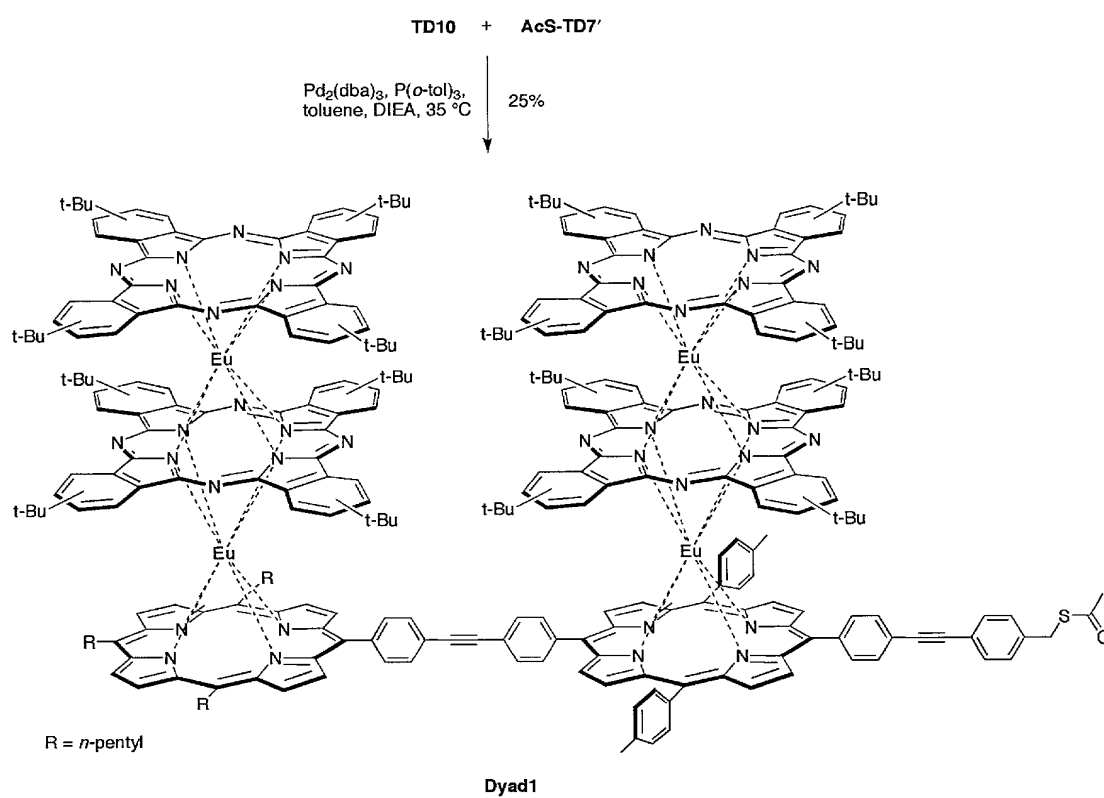
(*n*-Bu)₄NF, THF, 0 °C

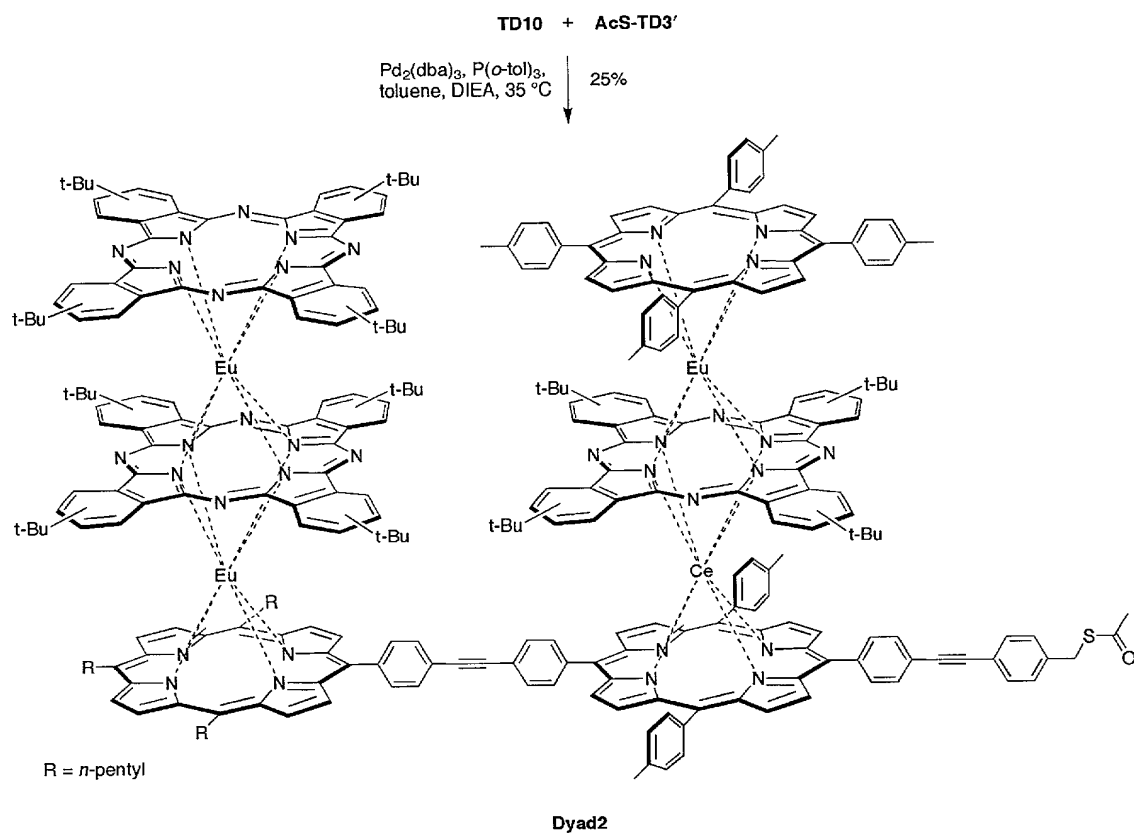
Fig. 23

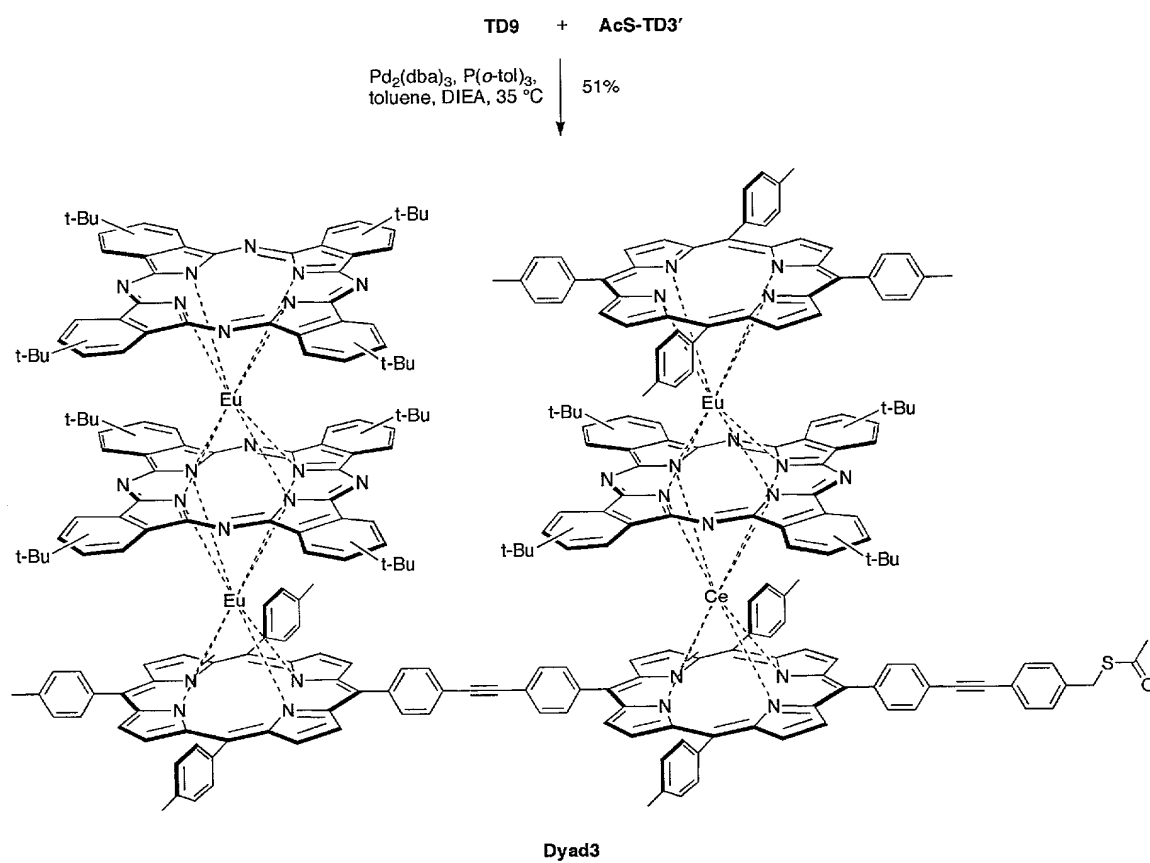


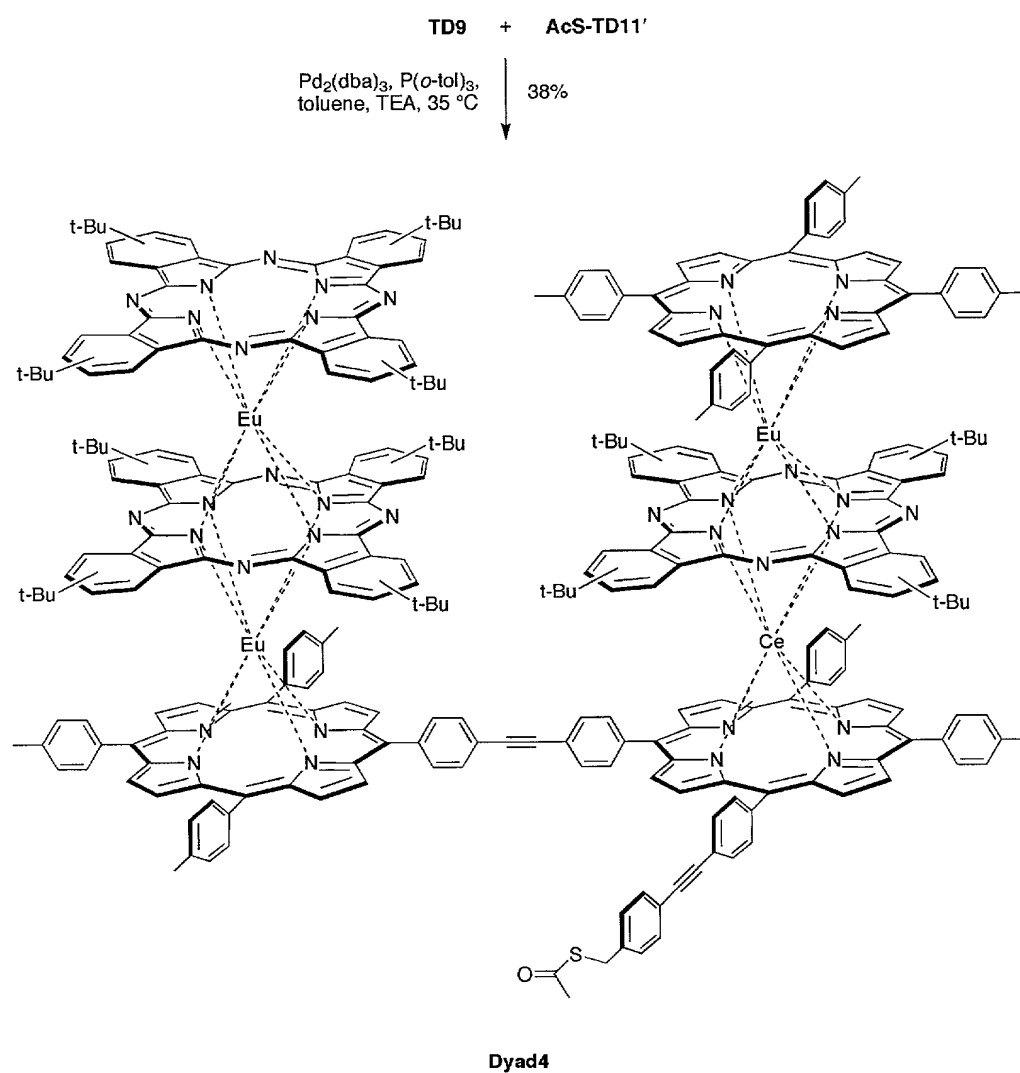
R ¹	R ²	Triple Decker
I	TMS	TD7
	TMS	AcS-TD7 (59%)
	H	AcS-TD7' (89%)

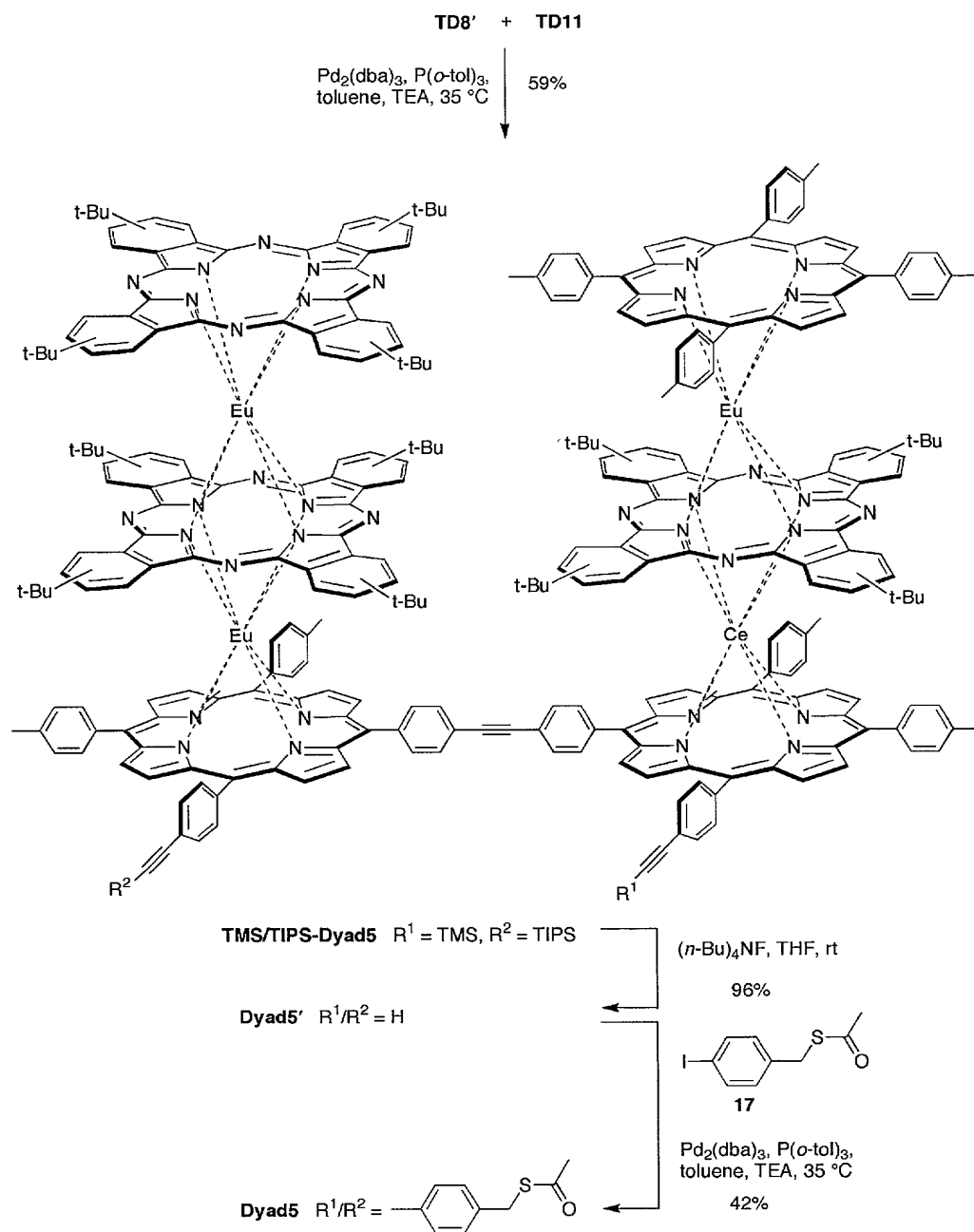
**Fig. 24**

**Fig. 25**

**Fig. 26**

**Fig. 27**

**Fig. 28**

**Fig. 29**

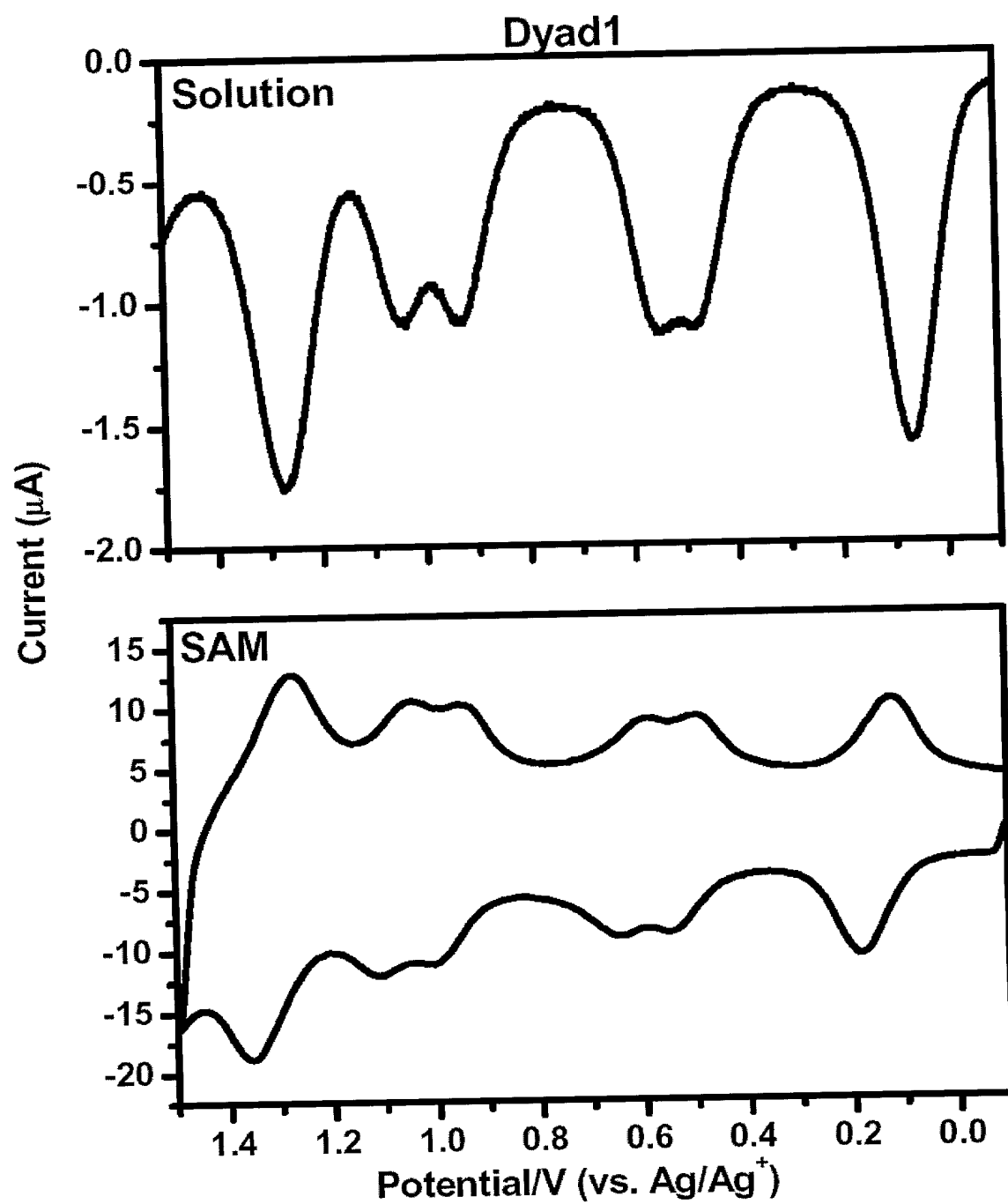


Fig. 30

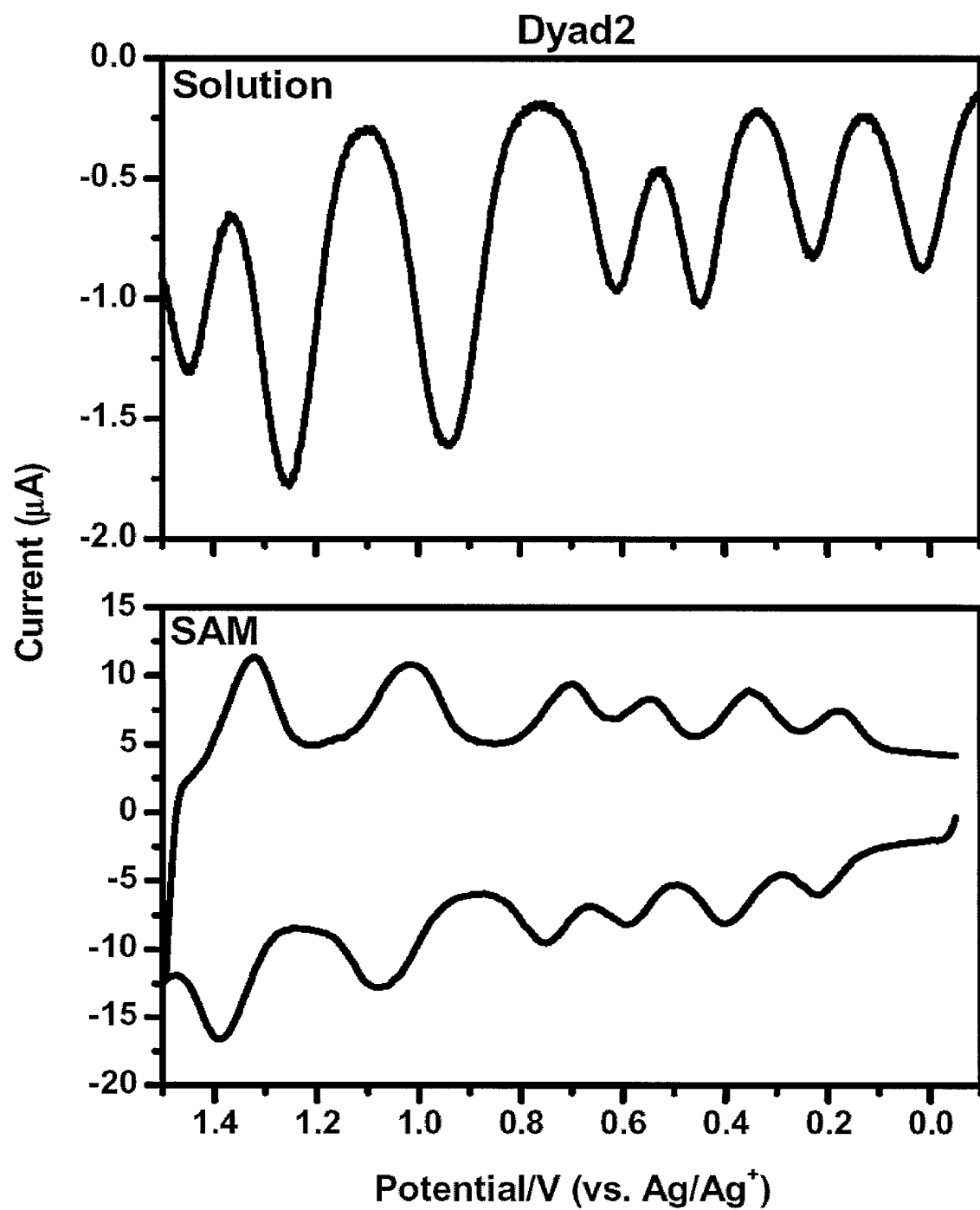
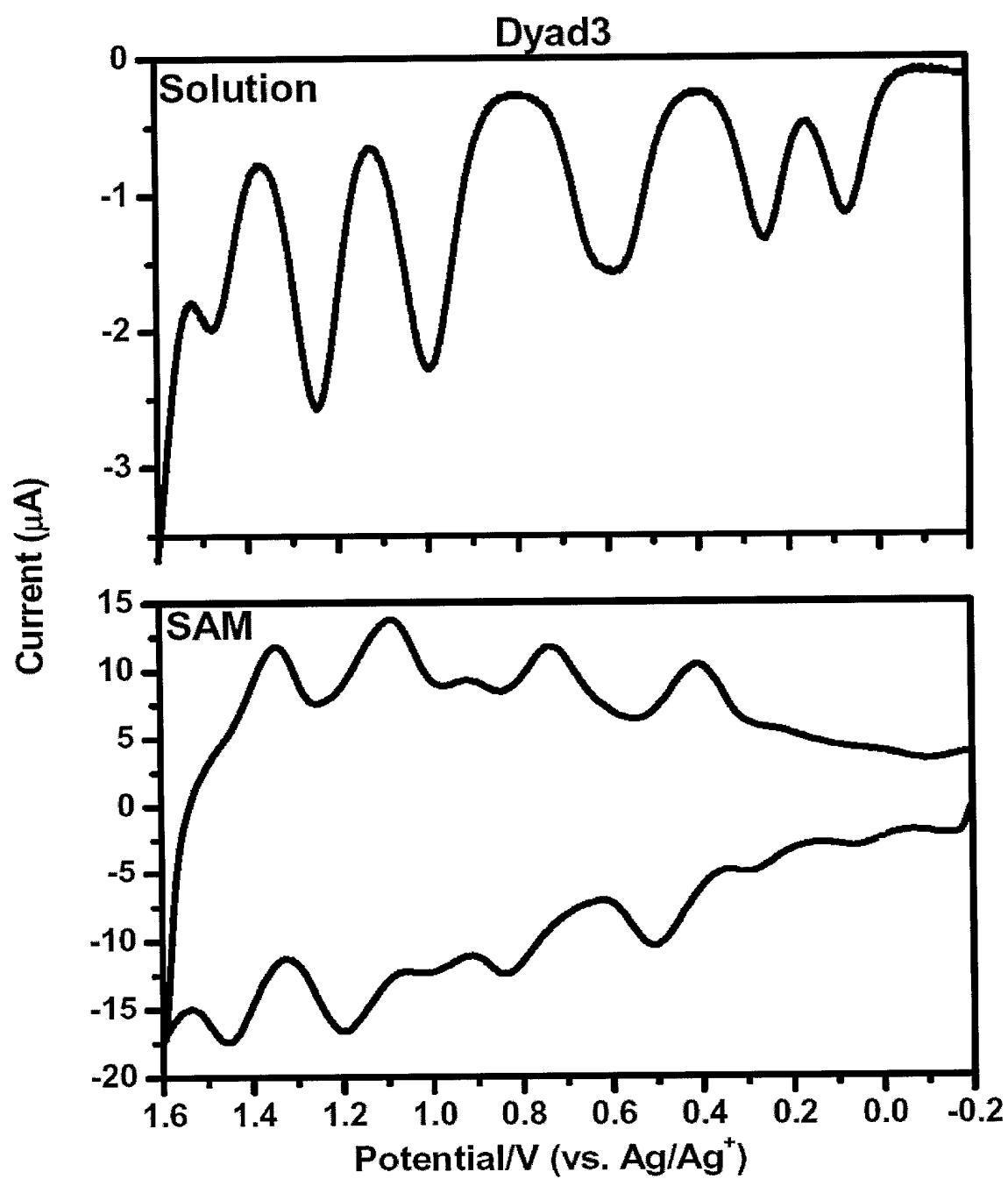


Fig. 31

**Fig. 32**

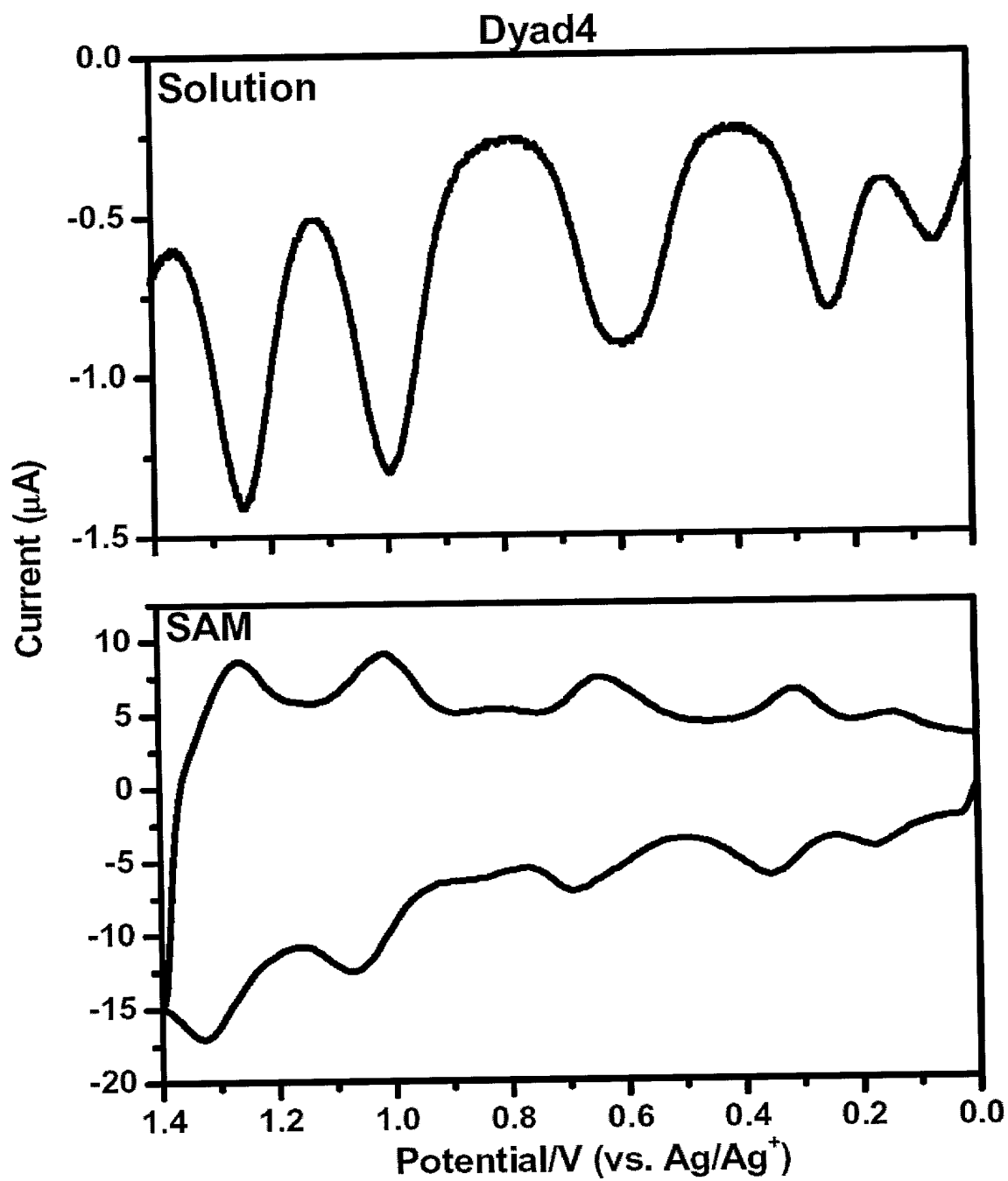


Fig. 33

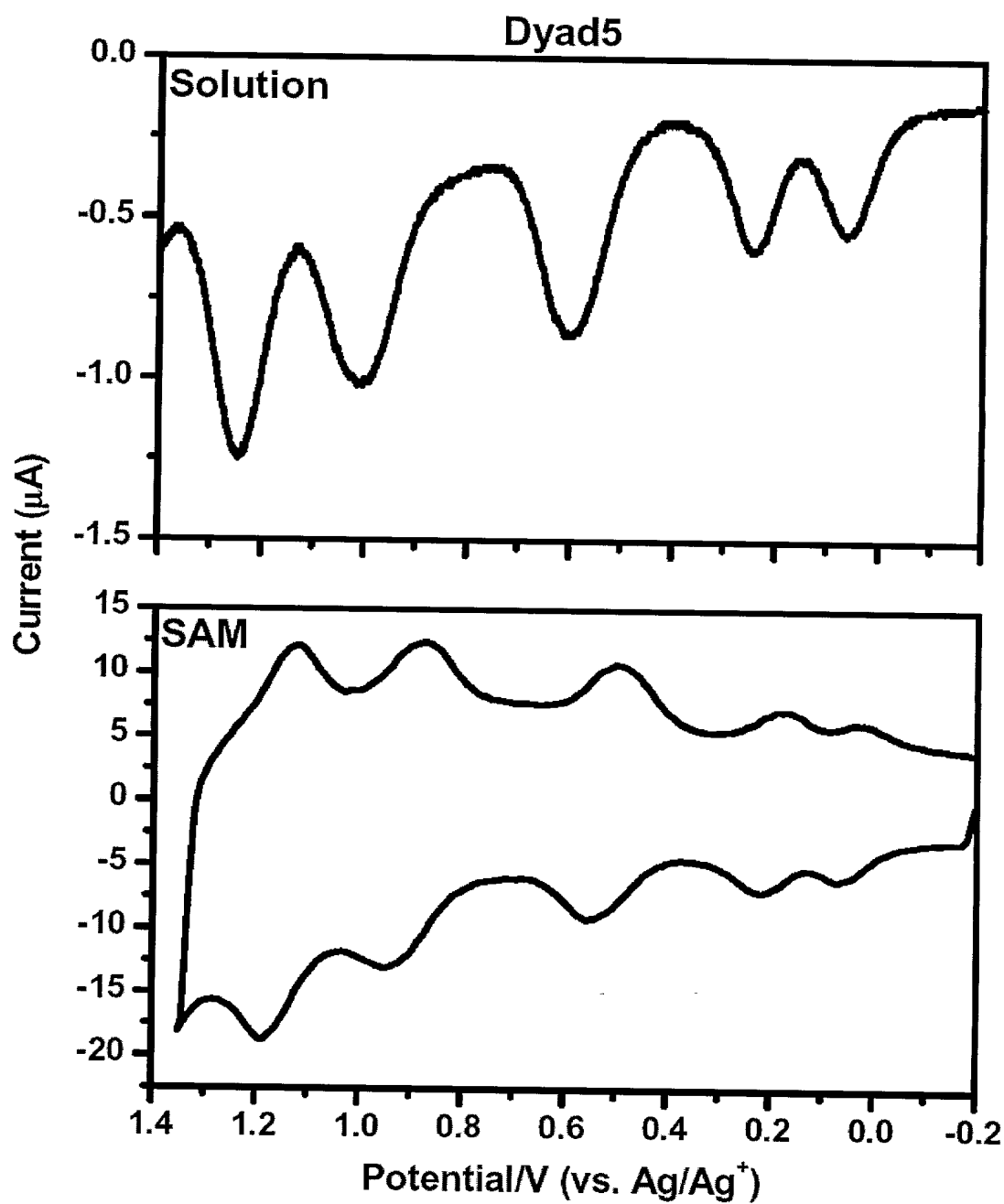


Fig. 34